REMARKS

Reconsideration of this application is respectfully requested in light of the above amendments and following remarks. Further to Applicant's election without traverse of Species I in the reply filed on 2/7/05, claims 8, 9, 28, 36, 37, 55, 58 and 59 were withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to non elected Species II and III. Claims 1 – 6, 11- 17, 19, 20, 23, 24, 29 – 34, 39 – 45, 47 – 49, 51, 56, 60 -65, 67, 68, 70 remain in the application and claims 7 – 10, 18, 21, 22, 25 – 28, 35 – 38, 46, 50, 52 – 55, 57 – 59, 66, 69 and 71 have been cancelled.

I. The drawings were objected to under 37 CFR 1.83(a). The office action required the subject matter of claims 7, 35, 57 ("a transmission line") and the subject matter of claims 22, 50, and 69, ("a metallic electrode with ... associated with at least one resonator") must be shown or the feature(s) canceled from the claim(s). Applicant has cancelled claims 7, 22 35, 50, 57, and 69 thereby rendering this rejection moot.

II. The abstract of the disclosure was objected to because the abstract should be limited to a single paragraph. The present amendment limits the abstract herein to one paragraph and thus Applicant submits this rejection is now traversed.

III. The office action set forth that the attempt to incorporate subject matter into this application by reference to US patent application 09/457,943 is improper because essential material may not be incorporated by a pending US application. Applicant incorporated the Examiner's suggestion and changed the incorporation by reference from the US application number to US Patent Application Publication no. 2002/0186099.

IV. The disclosure was objected to because of the following informalities:

The specification contains various typographical errors including p. 8, line 19, ";" should be corrected to --.--; p. 12, line 2, "Resisters" should be corrected to —Resistors--; p. 12, line 9, "2A" should be corrected to -2--, etc.. Applicant has made the aforementioned changes in the present response.

V. Claims 23 and 56 were objected to as claim 23 was dependent on a missing claim 21. Further, the office action noticed that in claim 56, last line, ";" should be deleted. Appropriate correction has been taken in the present response.

VI. Claims 7, 12, 13, 16, 24, 35, 40, 41, 44, 50, 51, 57, 64, and 70 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 12, line 7, "said variable capacitors" lacks antecedent basis. Amended claim 12, has corrected the lack of antecedent basis as follows:

> 12. (Currently Amended) The voltage-controlled tunable comb-ring type filter of claim 1~~0~~, further comprising biasing lines associated with said ~~variable~~ voltage tunable dielectric capacitor to provide bias to said ~~variable~~ voltage tunable dielectric capacitors.

In claims 16, 44 and 64, "wherein in any or all of said resonators DC blocking capacitor..." could not be understood. Applicant has amended claim 16, 44 and 64 to more clearly claim the subject matter.

> 16. (Currently Amended) The voltage-controlled tunable comb-ring type filter of claim 1, wherein in ~~any or all of said resonators~~ at least one DC blocking capacitor ~~are~~ is

used at the end of said ~~any or all of said~~ first resonator~~s~~, said second resonator or said third resonator in order to bias any or all of said resonators.

44. (Original) The method of filtering signals using a voltage-controlled tunable comb-ring type filter of claim 29, wherein in ~~any or all of said resonators~~ at least one DC blocking capacitor ~~are~~ is used at the end of said ~~any or all of said~~ first resonator~~s~~, said second resonator or said third resonator in order to bias any or all of said resonators.

64. (Original) The voltage-controlled tunable comb-ring type filter of claim 57, wherein in ~~any or all of said resonators~~ at least one DC blocking capacitor ~~are~~ is used at the end of said ~~any or all of said~~ first resonator~~s~~, said second resonator or said third resonator in order to bias any or all of said resonators.

In claim 24, "the varactor" lacked antecedent basis. This has been corrected as follows:

24. (Currently Amended) The voltage-controlled tunable comb-ring type filter of claim 1~~0~~, wherein the center frequency of the filter is tuned by changing the ~~varactor~~ voltage tunable dielectric capacitor capacitance controlled by changing the voltage applied to said ~~varactor~~ voltage tunable dielectric capacitor.

In claims 7, 35, and 57, "the cross coupling mechanism" lacks antecedent basis. These claims have been canceled rendering the objection moot. In claim 41, "said biasing lines" lacks antecedent basis (claim 41 should be dependent on claim 40 instead of claim 29). Claim 41 has been amended to depend on claim 40 instead of 29. In claim 50, "the metallic electrode" lacked antecedent basis as it appeared that claim 50 should be dependent on claim 49 instead of claim 48). Applicant has amended claim 50 to depend on claim 49 instead of claim 50.

In claims 51 and 70, "the varactor" lacks antecedent basis. Claims 51 and 70 have been amended to the following correcting the lack of antecedent basis:

51. (Currently Amended) The method of filtering signals using a voltage-controlled tunable comb-ring type filter of claim 38, wherein the center frequency of the filter is tuned by changing the ~~varactor~~ voltage tunable dielectric capacitor's capacitance controlled by changing the voltage applied to said ~~varactorvariable~~ voltage tunable dielectric capacitor.

70. (Currently Amended) The voltage-controlled tunable comb-ring type filter of claim 66, wherein the center frequency of the filter is tuned by changing the ~~varactor~~ voltage tunable dielectric capacitor's capacitance controlled by changing the voltage applied to said ~~varactor~~ voltage tunable dielectric capacitor.

In claim 40, "said variable capacitor" lacked antecedent basis. Claim 40 has been amended as follows to provide for correct antecedent basis:

40. (Currently Amended) The method of filtering signals using a voltage-controlled tunable comb-ring type filter of claim 29, further comprising the step of providing bias to said ~~variable~~ voltage tunable dielectric capacitors by providing biasing lines associated with said ~~variable~~ voltage tunable dielectric capacitor.

VII. Claims 1, 2, 4-6, 10-14, 16, 18-20, 22-27, 29, 30, 33-34, 38-42, 44, and 46-54 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/051,144. Although the

conflicting claims were not considered identical, they were believed not patentably distinct from each other because the instant claims are the same except in semantics.

Claims 3, 15, 17, 31, 43, 45, 56, and 60-71 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/051,144 in view of Liang et al. (US Pat. Appl. Pub. `719).

Applicant submits herewith a terminal disclaimer which Applicant believes traverses the double patenting objection.

VIII. Claims 1, 2, 4-6, 10-14, 16, 18-20, 22-27, 29, 30, 33-34, 38-42, 44, 46-54, 56, 60-62, 64, and 66-71 are rejected under 35 U.S.C. 102(e) as being anticipated by Shamsaifar et al. (US Pat. Appl. Pub. `820). Applicant has amended the independent claims to include the following limitation:

> , wherein at least one of said resonators includes at least one voltage tunable dielectric capacitor and wherein the cross coupling is realized by a transmission line shorted on both ends of at least one of said first, second or third resonators or by placing a ring resonator in a different layer relative to a combline resonators or by keeping two comb line resonators straight and in proximity to a ring resonator.

Support for this amendment can be found at least on page 11, line 8, page 11, line 13 and page 12, line 14. Applicant submits that the '820 references neither discloses nor suggests this limitation. Indeed, the named Applicant of this cited reference is a senior engineer and colleague at the company to which the present application is assigned and can attest (by affidavit if the Examiner requests such) to the immense effort undertaken to achieve the benefits of this unique invention including the cross coupling when used with the tunable varactors as set forth herein. Testament to the non-obvious nature of this structure is the need for the expert in the field of tunable filter structures (i.e., Mr. Rahman, named Applicant of the present invention) to be hired

to educate Mr. Shamsaifar (named inventor of cited art) in order to derive the present invention. Thus, with the amendment of the independent claims, applicant submits that independent claims 1, 29 and 56 are in condition for allowance as well as the remaining non-cancelled claims that depend therefrom.

IX. Claims 1, 2, 4-7, 14, 22, 29, 30, 32-35, 42, and 49 were rejected under 35 U.S.C. 102(e) as being anticipated by Peters (US `259). Applicant submits that Peters does not teach or suggest the following limitations of the currently independent claims:

- wherein at least one of said resonators includes at least one voltage tunable dielectric capacitor
- wherein the cross coupling is realized by a transmission line shorted on both ends or by placing the ring resonator in a different layer relative to the combline resonators or by keeping two comb line resonators straight and in proximity to the ring resonator.

Thus, with the amendment of the independent claims, applicant submits that independent claims 1 and 29 are in condition for allowance as well as the remaining non-cancelled claims that depend therefrom.

X. Claims 1, 2, 4-7, 14, 29, 30, 32-35, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al. (US `073). Applicant submits that Miyazaki et al. does not teach or suggest the following limitations of the currently amended independent claims:

- wherein at least one of said resonators includes at least one voltage tunable dielectric capacitor
- wherein the cross coupling is realized by a transmission line shorted on both ends of at least one of said first, second or third resonators or by placing a ring resonator in a

different layer relative to a combline resonators or by keeping two comb line resonators straight and in proximity to a ring resonator.

Thus, with the amendment of the independent claims, applicant submits that independent claims 1 and 29 are in condition for allowance as well as the remaining non-cancelled claims that depend therefrom.

XI. Claims 3, 15, 17, 31, 43, 45, 56, and 60-71 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shamsaifar et al. (US Pat. Appl. Pub. `820) in view of Liang et al. (US Pat. Appl. Pub. `719). Claims 7 and 35 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shamsaifar et al. (US Pat. Appl. Pub. `820) in view of Peters (US `259). Claims 3, 10-13, 15-20, 23-28, 31, 38-41, 43-48, 56, 57, and 60-71 were rejected under 35 U.S.C. 103(a) as being unpatentable over Peters (US `259) in view of Liang et al. (US Pat. Appl. Pub. `719). Claims 3, 10-13, 15-20, 22-28, 31, 38-41, 43-54, 56, 57, and 60-71 were rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. (US '073) in view of Liang et al. (US Pat. Appl. Pub. '719).

Applicant submits that for the reasons set forth above, the independent claims, which include the following limitations

- wherein at least one of said resonators includes at least one voltage tunable dielectric capacitor
- wherein the cross coupling is realized by a transmission line shorted on both ends of at least one of said first, second or third resonators or by placing a ring resonator in a different layer relative to a combline resonators or by keeping two comb line resonators straight and in proximity to a ring resonator.

are not rendered obvious based on any of the above cited art.